

FEB/FY06

FORT STORY
Virginia

**Army Defense Environmental
Restoration Program
Installation Action Plan**

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The purpose of the Installation Action Plan (IAP) is to outline the total multi-year Cleanup Program for an installation. The plan identifies environmental cleanup requirements at each site or area of concern, and proposes a comprehensive, installation-wide approach, with associated costs and schedules, to conduct investigations and necessary remedial actions (RAs).

In an effort to coordinate planning information between the restoration manager, US Army Environmental Center (USAEC), Fort Story, the Installation Management Agency (IMA), the executing agencies, and the regulatory agencies, an IAP was completed. The IAP is used to track requirements, schedules and tentative budgets for all Army installation cleanup programs.

All site-specific funding and schedule information has been prepared according to projected overall Army funding levels and is, therefore, subject to change.

The following agencies contributed to the formulation and completion of this IAP during a planning workshop held on 8 February 2006:

Company/Installation/Branch

Corps of Engineers, Baltimore District

Engineering and Environment, Inc. for USAEC

Fort Eustis Directorate of Public Works (DPW) – Environmental Division

Fort Eustis Staff Judge Advocate

IMA - North Environmental Regional Office (NERO)

Malcolm Pirnie

USAEC

US Environmental Protection Agency (EPA), Region III

Virginia Department of Environmental Quality (VDEQ)

AEDB-R	Army Environmental Data Base-Restoration
BARC	Barge Amphibious Re-supply Cargo
CENAO	US Army Corps of Engineers, Norfolk District
CERCLA	Comprehensive Environmental Response Compensation and Liability Act (1980)
CTT	Closed, Transferring and Transferred
DERP	Defense Environmental Restoration Program
DD	Decision Document
DMM	Discarded military munitions
DoD	Department of Defense
DPW	Directorate of Public Works
EPA	(United States) Environmental Protection Agency
ER,A	Environmental Restoration, Army (formerly DERA)
FS	Feasibility Study
FY	Fiscal Year
IAP	Installation Action Plan
IMA	Installation Management Agency
IRA	Interim Remedial Action
IRP	Installation Restoration Program
JMM	James M. Montgomery, Consulting Engineers
K	\$1,000
LARC	Lighterage Amphibious Resupply Cargo
LOTS	Logistics-over-the-Shore
LTM	Long-term Management
MC	Munitions Constituents
MEC	Munitions Explosive of Concern
MMRP	Military Munitions Response Program
NERO	Northeast Environmental Regional Office
NFA	No Further Action
NPL	National Priorities List
PA	Preliminary Assessment
PCB	Polychlorinated biphenyl
PCE	Tetrachloroethylene
PHEA	Remedial Investigation/Public Health and Environmental Assessment
POL	Petroleum, Oil & Lubricants
PRG	Preliminary Remediation Goal
RA	Remedial Action
RA(C)	Remedial Action (Construction)
RA(O)	Remedial Action (Operation)
RAB	Restoration Advisory Board
RAC	Risk Assessment Code
RC	Response Complete
RD	Remedial Design
REM	Removal
RI	Remedial Investigation
RIP	Remedy in Place

ROD	Record of Decision
RRSE	Relative Risk Site Evaluation
S & A	Supervision & Administration
SI	Site Inspection
TAPP	Technical Assistance for Public Participation
TCE	Trichloroethene
TCL	Target Compound List
TPH	Total Petroleum Hydrocarbons
TRC	Technical Review Committee
USAEC	United States Army Environmental Center
USAEHA	United States Army Environmental Hygiene Agency (now USACHPPM)
USATHAMA	United States Army Toxic and Hazardous Material Agency (now USAEC)
UST	Underground Storage Tank
UXO	Unexploded Ordnance
VDEQ	Virginia Department Environmental Quality
VOC	Volatile Organic Compounds

Installation Locale: Fort Story is located at the confluence of the Chesapeake Bay and the Atlantic Ocean, north of the resort area in the City of Virginia Beach, Virginia. Fort Story occupies an area of approximately 1,450 acres, and approximately 2,000 military personnel and civilians work, live or train at Fort Story. Based on 2000 estimates, the cities adjacent to Fort Story, which include Virginia Beach, Norfolk, and Chesapeake, have respective populations of 439,889, 241,000, and 199,184.

Installation Mission: Fort Story, a sub-installation to Fort Eustis, is primarily used as the Army's only installation conducting Logistics-Over-The-Shore (LOTS) training. With the presence of the 11th Transportation Battalion (Terminal), a subordinate unit to the 7th Transportation Group (Composite), LOTS and amphibious training occur routinely. Other active and reserve tenant units from the Army, Navy and Marines make Fort Story a joint training facility. Fort Story also serves as a testing site for new transportation doctrine, concepts and equipment.

Lead Organization: IMA-NERO, Fort Monroe, VA

Lead Executing Agencies:

Investigation/Long-term Monitoring/Design Phase Executing Agency: US Army Corps of Engineers, Norfolk District (CENAO), Baltimore District.

RA Phase Executing Agency: CENAO

Interim Remedial Action (IRA) Phase Executing Agency: US Army Corps of Engineers, Omaha District.

Underground Storage Tank (UST) Investigations/Actions: Army Contracting Agency – Northern Region Contracting Center (NRCC) and Directorate of Contracting (DOC) at Fort Eustis.

Regulatory Participation

State: VDEQ, Federal Facilities Program.

Federal: N/A

National Priorities List (NPL) Status: Non- NPL

Installation Restoration Advisory Board (RAB)/Technical Review Committee (TRC)/Technical Assistance for Public Participation (TAPP) Status:

There has been no community interest in restoration activities at Fort Story; therefore no TRC or RAB has been formed.

Installation Program Summaries

IRP

Primary Contaminants of Concern: Petroleum/Oil/Lubricants (POL), Metals, Volatile Organic Compounds (VOC)

Affected Media of Concern: Surface Water, Groundwater, Soil

Estimated Date for Remedy in Place (RIP)/Response Complete (RC): 2007/2010

Funding to Date (up to FY05): \$5,765,000

Current Year Funding (FY06): \$398,000

Cost-to-Complete (FY07+): \$438,000

MMRP

Primary Contaminants of Concern: Metals

Affected Media of Concern: Soil

Estimated Date for RC: 2017

Funding to Date (up to FY05): \$25,000

Current Year Funding (FY06): \$0

Cost-to-Complete (FY07+): \$780,000

Cleanup Program Summary

Installation Historic Activity

Fort Story is an active installation owned and operated by the Department of the Army and is the home of the 11th Transportation Battalion. Currently, Fort Story is not slated for base closure. Tenant activities at Fort Story include the Army Reserve, Navy, and Marine Corps. The US Coast Guard operates the Cape Henry Lighthouse, which is located within the Installation boundary on Department of Transportation property.

Fort Story became a military installation in 1914 and was integrated into the Coastal Defenses of the Chesapeake Bay during World War I. After the war, Fort Story was inactive until the start of World War II. As World War II approached, Fort Story began extensive development. Nearly 50 percent of the existing facilities were constructed during this period. By September of 1944, Fort Story began to transition from a heavy artillery base to a convalescent center for returning soldiers. The hospital operated until 1946 when conversion of Fort Story to an amphibious training facility was begun. Fort Story's present mission is to provide facilities and logistical services for amphibious operations and training.

CURRENT ACTIVITY: Currently, environmental investigations at Fort Story are being funded through the IRP. VDEQ reviews these IRP efforts. Fort Story is currently not on the NPL. There has been no community interest in restoration activities at Fort Story so no TRC or RAB has been formed.

IRP

Prior Year Progress: A Final Decision Document (DD) requiring NFA was signed for the Firefighter Training Area and the Auto Craft Building Area in August 2004. Results from a pilot scale treatability study, which was conducted from the summer of 2003 through the summer of 2004, were used to evaluate remedial alternatives at the Lighterage Amphibious Resupply Cargo (LARC) 60 Maintenance Area site. A Draft Feasibility Study (FS) Report was submitted for regulatory review in March 2005. The Draft FS Report proposes in-situ chemical oxidation of groundwater contamination as the selected alternative.

Future Plan of Action: Following completion of the FS Report for the LARC 60 Maintenance Area site, a proposed plan and ROD will be developed. A RA (i.e., in-situ chemical oxidation of groundwater) is scheduled for 2006. Remedial Action (Operation) (RA[O]) will be in FY07.

MMRP

Prior Year Progress: The Preliminary Assessment (PA) is completed at all sites.

Future Plan of Action: The installation plans to complete the Site Inspection (SI) by FY08 and execute follow on phases/actions as required in the individual site cleanup strategy.

FORT STORY

Installation Restoration Program

Total Army Environmental Database – Restoration (AEDB-R) IRP Sites/AEDB-R Sites with RC: 11/10

Different Site Types:

1 Fire/Crash Training Area	1 Contaminated Groundwater
3 Landfills	3 Spill Site Areas
1 Underground Tank Farm	2 USTs

Most Widespread Contaminants of Concern: POL, Metals, VOCs

Media of Concern: Groundwater

Completed Removal (REM)/IRA/RA:

- RAs at FTSTY-13 and -14; removal of USTs (Fiscal Year [FY] 93) \$227K
- IRAs at FTSTY-04 and -06; removal of contaminated soil (FY93-94) \$952K
- IRA at FTSTY-15; removal of contaminated soil (FY94-95) \$413K

Total IRP Funding

Prior Years (up to FY05):	\$5,765,000
Current Year Funding (FY06):	\$ 398,000
<u>Future Requirements (FY07+): ...</u>	<u>\$ 438,000</u>
Total:	\$6,601,000

Duration of IRP

Year of IRP Inception: 1977 (Landfill Study)

Year of IRP RIP/RC: 2007/2010

Year of IRP Completion including Long-Term Management (LTM): 2015

IRP Contamination Assessment Overview

Contamination assessments at Fort Story started in 1977 when the US Army Environmental Hygiene Agency (USAEHA) conducted a landfill study at one sanitary landfill at Fort Story and two Fort Eustis sanitary landfills. The USAEHA study at Fort Story addressed potential contamination at Landfill #3 and Pond (FTSTY-03) to determine if the leachate generated at the landfill could be impacting water quality in the nearby freshwater pond. The investigation concluded that the landfill was not causing any local problems.

An Installation Assessment report for Fort Story was completed in September 1982 and an Update to the Installation Assessment was completed in September 1988. The purpose of the Installation Assessments was to identify areas where toxic and hazardous materials may have been used, and where the potential for off-post migration may exist. The 1988 report identified several sites (FTSTY-04, FTSTY-07, and FTSTY-12) but recommended no further remedial investigations (RIs) be conducted at these sites. Aerial photographic imagery was also conducted and indicated no major environmental problems. The report concluded that groundwater contamination has occurred in the vicinity of Landfill #3 and recommended the review of the water quality data that was being collected to determine if any further actions may be required. The report also recommended developing a ground water quality monitoring plans for the two other abandoned Landfills #1 and #2 (FTSTY-01 and FTSTY-02).

Between 1987 and 1988, a series of studies and Hazardous Waste Consultations were conducted by USAEHA and US Army Toxic and Hazardous Material Agency (USATHAMA) at Landfill #3 to identify potential contamination that may exist and to provide recommendations for future action. The groundwater analytical results from Landfill #3 showed no contamination from organic priority pollutant compounds. Metals were detected but the reports concluded that a contamination problem did not exist; therefore, no further monitoring was recommended at the site.

In January 1990, James M. Montgomery, Consulting Engineers (JMM) initiated a RI/Public Health and Environmental Assessment (PHEA), which addressed contamination at Landfill #3 and Pond (FTSTY-03). This evaluation involved several phases of activity, such as collecting additional environmental data to characterize site conditions, determining the nature and extent of contamination at the site, and assessing the baseline human health and environmental risks posed by constituents detected in site media. The information collected during the RI/PHEA study supported the decision for "NFA" at the site.

JMM conducted a SI of the Block 600 UST Area (FTSTY-14), which involved the sampling of the UST contents and collecting groundwater samples from 10 temporary well points that were installed for the project. The data collected during this effort provided the necessary data to prepare plans and specifications for a UST REM action, which has since been completed.

In January 1992, JMM completed a PA/SI study for eight sites at Fort Story, including the following RMIS sites: FTSTY-01, -02, -04, -05, -06, and -07. The PA/SI activities at Fort Story were designed to confirm the presence or absence of significant contamination in site soils, sediments, groundwater and surface waters, qualitatively assess the potential for contaminant migration into the surrounding

IRP Contamination Assessment

wetland areas, and define future investigations or other actions required. The report recommended additional confirmatory sampling at FTSTY-02 and a RI/FS be conducted on FTSTY-04, -05, -06 and -07. NFA was recommended at FTSTY-01 (Landfill #1).

In August 1992, JMM submitted final plans, specifications, and cost estimates for the removal of five USTs at the Atlantic Street Gas Station (FTSTY-13). Plans were also submitted for the removal of the USTs and contaminated soil at the Block 600 UST Site (FTSTY-14). Both UST REM projects were completed in December 1993.

In January 1993, JMM completed a PA/SI at the LACV-30 Wetlands Area (FTSTY-12). Analytical results from the LACV-30 field sampling effort were used to confirm the presence or absence of significant contamination in site soils, sediments, groundwater and surface waters; to assess the potential for contaminant migration into the surrounding wetland areas; and to determine future investigations or actions that may be required. Based on all data collected during this PA/SI evaluation, there is no evidence indicating that operations at the LACV-30 Site have contributed significant hazardous substance releases to environmental media. Therefore a recommendation of "NFA" was selected for the LACV-30 Site.

In October 1992, an IRA was initiated at the Fire Fighting Training Area (FTSTY-04) and the LARC-60 Maintenance Area (FTSTY-06) and the project was completed in November 1994. Approximately 410 cubic yards of contaminated soil was removed from the Fire Fighting Training Area and transported to the LARC-60 Area for treatment. Contaminated soil was also removed from the LARC-60 sandbox area. A total of 15,000 cubic yards of soil was bioremediated on-site and 85 cubic yards were transported to a disposal facility.

In July 1994, an IRA was initiated at the 80th Division Reserve Site (FTSTY-15) for the removal of petroleum contaminated soil. The project was completed in April 1995. Approximately 2,660 cubic yards of contaminated soil was excavated and transport off-site for thermal treatment. Clean fill material was then used to backfill the area. Tetrachloroethylene (PCE) contaminated soil was encountered in one area. The PCE soil was put in a roll-off, analyzed and disposed of as a Resource Conservation and Recovery Act hazardous waste. During the June 2000 IAP meeting with VDEQ, it was determined the 80th Division Reserve Site was not Environmental Restoration, Army (ER,A) eligible.

In July 1994, a RI was initiated and scoped for the Fire Training Area (FTSTY-04), LARC 60 Maintenance Area (FTSTY-06), and the Former Auto Craft Shop (FTSTY-07). This project was developed based on the recommendations from the January 1992 PA/SI. A Draft RI Report was prepared in December 1995 and sent to VDEQ for review and comments.

At the Fire Training Area, limited VOCs, semi-volatile organic compounds, total petroleum hydrocarbons (TPH) and metals were detected in surface and subsurface soils but they were below the EPA risk screening criteria. PCE, total lead and total arsenic were detected in the groundwater above EPA risk screening criteria. The results of the baseline risk assessment did not identify receptors or potentially exposed populations, so NFA was recommended at this site. Additional sampling was conducted in 2000 to support the recommendation.

IRP Contamination Assessment

A Draft DD recommending NFA was submitted in March 2003 for regulatory review. The DD was finalized in August 2004.

At the LARC-60 Maintenance Area, no compounds were detected in soils or sediment above EPA risk screening criteria; however, PCE, trichloroethene (TCE), Cis 1,2-chloroethene, toluene, total lead, total and dissolved manganese and total and dissolved arsenic were detected in the groundwater above the EPA risk screening criteria. There are no exposure pathways or exposed population for the groundwater or surface water at this site, so NFA was also recommended. VDEQ, however, did not agree. In March 2000, additional sampling was conducted to determine if natural attenuation was taking place. In August 2000, VDEQ stated some sort of groundwater remediation would be necessary to address the groundwater contamination. In that same year, a FS was awarded. A Treatability Study was awarded in September 2001. Results were used to evaluate remedial alternatives at the site. A Draft FS Report was submitted for regulatory review in March 2005. The Draft FS Report proposes in-situ chemical oxidation of groundwater contamination as the selected alternative.

At the Former Auto Craft Shop, chloroform was the only compound detected in the groundwater above the EPA risk screening criteria. No constituents were detected in the soil or sediments above the EPA risk screening criteria. NFA was recommended. In August 2000, VDEQ sent the Installation a letter, which supported the recommendations that NFA is warranted at the Auto Craft Shop. A DD recommending NFA was submitted in March 2003 for regulatory review. VDEQ recommended sampling two wells for chloroform and manganese. Sampling was conducted in August 2003. Chloroform was not detected and manganese was detected slightly above the EPA risk based concentrations. Based upon these results, NFA was warranted at the site. The DD was finalized in August 2004.

IRP Cleanup Exit Strategy

A Draft FS Report for the LARC 60 Maintenance Area was submitted for regulatory review in March 2005. The Draft FS Report proposes in-situ chemical oxidation of groundwater contamination (injection of reagent) as the selected alternative. VDEQ comments were received in December 2005 and are currently being addressed by the installation. A design and RA are programmed with three years of operation. Long-term monitoring will be conducted on an annual basis and will continue for at least five years after the RA. After it can be demonstrated that the groundwater concentrations are below established Preliminary Remediation Goals (PRGs) that were determined to be protective to human health, the Installation will petition VDEQ for closure.

Previous Studies

1982

- Aberdeen Proving Ground, Potable Recreational Water Quality Survey No. 31-61-0110-83 Fort Eustis (and Fort Story) Virginia., United States Army Toxic and Hazardous Materials Agency (USATHAMA), Nov 15-19, 1982

1987

- Landfill Study No. 26-0031-78, Fort Eustis, US Army Environmental Hygiene Agency (USAEHA), Oct 31 - Nov 11, 1987
- Hazardous Waste Consultation No. 37-26-0173-89, Fort Eustis and Fort Story, USAEHA, Jun 22-25, 1987
- Geohydrologic Study, No. 38-26-0828-88, Sanitary Landfill Investigation, Fort Story, USAEHA, Oct 5-8, 1987
- Aberdeen Proving Ground, Geohydrologic Study, No. 38-26-0828-88, Sanitary Landfill Investigation, Fort Story, USATHAMA, Oct 5-8, 1987

1988

- Update of the Initial Installation Assessment of Ft. Story, Final Report, Environmental Science and Engineering (ESE), Sep-88
- Update of the Initial Installation Assessment of Fort Story, Hendry, C.D., Newman, K.G., and Becker, K.A. Environmental Science and Engineering, Inc, USATHAMA, Sep-88

1989

- Hazardous Waste Consultation, No. 37-26-0173-89, Fort Eustis and Fort Story, June 22-25, 1987, Memorandum for Record, USAEHA, 19-Jan-89

1991

- Final SI Report - Initial Site Investigation and Design for UST REM, Block 600, Fort Story, James M. Montgomery (JMM), 1991

1992

- Final SI Report for the Fort Story PA/SI and Fort Story NIKE PA/SI, JMM, Jan-92
- Final Site Investigation Report, LACV-30 Maintenance Facility Wetlands Area, Fort Story, JMM, Dec-92
- Final RI/Public Health and Environmental Assessment Report, Fort Story, JMM, Dec-92

1994

- Final Site Assessment Report, 80th Division LARC 60 Area, Ft Story, JMM, May-94
- Site Characterization Report, 80th Division LARC 60 Area, Ft Story, ERC, 28-Jun-94
- Final Report, Fire Training Area No. 4 and LARC Area, Ft Story, IT Corp, Nov-94

1995

- Final Report, 80th Division REM Action, Fort Story, IT Corp, Aug-95
- Final Confirmatory Studies for Site 2 - Landfill 2, Ft Story, Montgomery Watson, Nov-95
- Draft Remedial Investigation Report, Firefighting Training Area, LARC 60 Maintenance Area, Auto Craft Building Area, Ft Story, Malcolm Pirnie, Dec-95

1996

- Draft Report Remedial Investigation Ecological Risk Assessment, Firefighting Training Area, LARC 60 Maintenance Area, Auto Craft Building Area, Fort Story, Malcolm Pirnie, Sep-96
- Draft Report Remedial Investigation Human Health Risk Assessment, Firefighting Training Area, LARC 60 Maintenance Area, Auto Craft Building Area, Fort Story, Malcolm Pirnie, Sep-96
- Draft Report Remedial Investigation Human Health and Ecological Risk Assessments, Firefighting

1997

- Training Area, LARC 60 Maintenance Area, Auto Craft Building Area, Ft Story, Malcolm Pirnie, Aug-97
- Final Work Plan, Ground Water Sampling and Analysis, Landfill No. 2, Fort Story, Malcolm Pirnie, Aug-97

1998

- Preliminary Draft Letter Report for Groundwater Sampling and Analysis Landfill No. 2, Malcolm Pirnie, Apr-98

1999

- Preliminary Draft Work Plan Addendum, Field Investigation Plan, Site-Specific Chemical Data Acquisition Plan, Site-Specific Site Safety And Health Plan, Remedial Investigation, Fire Training Area, LARC 60 Maintenance Area, Fort Story, Malcolm Pirnie, Aug-99

2002

- Remedial Investigation Report, Fire Training Area, LARC 60, and Auto Craft Sites, Fort Story, Virginia., Malcolm Pirnie, Dec-02

2003

- Draft DD, Fire Training Area and Auto Craft Sites, Fort Story, Virginia., Malcolm Pirnie, Mar-03
- Draft Work Plan Addendum, Treatability Study, LARC 60 Maintenance Area, Fort Story, Virginia., Malcolm Pirnie, May-03
- Final Groundwater Sampling and Analysis Report, Landfill No. 2, Malcolm Pirnie, Aug-03

2004

- Final DD (Firefighter Training Area (FTA) and Auto Craft Building Area), Malcolm Pirnie, Aug-04
- Preliminary Draft FS, LARC 60 Maintenance Area, Malcolm Pirnie, Dec-04

2005

- Draft FS, LARC 60 Maintenance Area, Malcolm Pirnie, Mar-05

2006

- Revised Draft FS LARC 60 Maintenance Area, Malcolm Pirnie (currently under USAEC Review)

FORT STORY

Installation Restoration Program Site Descriptions

FTSTY-06

LARC 60 Maintenance Area

SITE DESCRIPTION

The LARC-60 Maintenance Area is the maintenance and wash rack area for LARC vehicles. Presently, this is the only facility on the East Coast available to the Army Transportation Corps for amphibious training. It is located in the central portion of the post. The site includes the area around Buildings 1081, 1082, 1083 and 1084 just south of the DPW building near the intersection Atlantic Ave. and Okinawa Road.

During the 1950s, the area was first used as the barge amphibious re-supply cargo (BARC) motor pool and maintenance facility. In 1964, the BARC was phased out and the LARC was prototyped. In 1982, the LARC-60 facility was modified with the construction of a concrete wash rack pad and surface water drainage control structures. The wash rack area has 39 catch basins to route surface runoff to the drainage outfall system, which includes an oil/water separator. There was a 10,000-gallon UST located approximately 600 feet south of the wash rack area near the north gate of the LARC vehicle motor pool. This UST was installed in 1983. In 1987, the tank was sampled and found to contain oil, water, 1,1,1-trichloroethane and chromium. In the fall of 1992 the tank was removed by the Installation.

A PA/SI was conducted in 1990 to identify levels of contaminants in soil and groundwater. Four monitoring wells were installed. This investigation detected TPH values across most of the site, ranging from 160 to 13,000 milligrams/kilograms. It also found elevated levels of lead, copper, and zinc. Benzene and chlorinated solvents were detected in the monitoring well downgradient of the UST.

In October 1992, an IRA was initiated and completed in November 1994. Approximately 15,000 cubic yards of contaminated soil from the wash rack area (the "sandbox" area) was removed and bioremediated on-site.

In July 1994, a RI was initiated and scoped for this site. This project was developed based on the recommendations from the January 1992 PA/SI. A Draft RI Report was prepared in December 1995 and sent to VDEQ for review and comments. Five additional monitoring wells were installed. A total of nine groundwater-monitoring wells are located throughout

STATUS

REGULATORY DRIVER: CERCLA

RRSE: Medium

CONTAMINANTS OF CONCERN:
POL, VOCs, Metals

MEDIA OF CONCERN:
Groundwater

Phases	Start	End
PA	198909.....	199201
SI	198909.....	199201
RI/FS	199407.....	200309
IRA	199210.....	199408
RD	200306.....	200607
RA(C)	200603.....	200708
RA(O)	200708.....	201011
LTM	201011.....	201510

RIP DATE: 200708

RC DATE: 201011

FTSTY-06

LARC 60 Maintenance Area, cont.

the site. Soil, sediment, surface water and groundwater samples were collected throughout the site. No compounds were detected in soils or sediment above EPA risk screening criteria. However, PCE, TCE, Cis 1,2-chloroethene, toluene, total lead, total and dissolved manganese and total and dissolved arsenic were detected in the groundwater above the EPA risk screening criteria. There are no exposure pathways or exposed population for the groundwater or surface water at this site, so NFA was also recommended for this site. However, VDEQ reviewed the report and recommended that human health and ecological risk assessments be conducted. In August 1997, the risk assessment report was sent to VDEQ for review.

Some comments were received in November 1997. In early FY99, a project was awarded for additional sampling to further support the conclusions of the Draft RI Report. Dedicated sampling pumps were installed in six monitoring wells. The eight surficial soil samples were collected and analyzed for Target Compound List (TCL) pest/polychlorinated biphenyls (PCBs). Six groundwater samples were collected and analyzed for TCL VOCs, TCL pest/PCBs and total and dissolved target analyte list metals.

In August 2000, Fort Eustis received comments from VDEQ on the human health risk assessment. VDEQ recommended the construction and industrial worker scenario be evaluated. VDEQ had concern over the arsenic and manganese detected in the groundwater. Additional comments indicated that some sort of RA is necessary at the site to address the groundwater VOC contamination.

Based on comments received from VDEQ, the Installation awarded a FS in FY00 to re-evaluate human health risks, evaluate any potential cleanup alternatives and make a recommendation as to a cleanup alternative. The RI was finalized in December 2002. A Treatability Study was completed in 2004 and will be incorporated into the FS.

CLEANUP STRATEGY

Future efforts will be focused on the completion of the FS. It is anticipated that a RA (Injection of reagent) will be necessary to reduce the levels of PCE and TCE in the groundwater. A design and RA are programmed with three years of operation and five additional years of groundwater monitoring. After it can be demonstrated that the groundwater concentrations are below established PRGs that were determined to be protective to human health, the Installation will petition VDEQ for closure.

IRP NFA Sites Summary

AEDB-R #	Site Title	Documentation/Reason for NFA	RC Date
FTSTY-01	CLOSED LANDFILL 1	Based on the levels detected at the site, the PA/SI recommended NFA.	199201
FTSTY-02	CLOSED LANDFILL 2	Currently, the site will be in the LTM phase until VDEQ approves NFA. Request for closure submitted to VDEQ with Final Groundwater Sampling and Analysis Report (Aug 2003).	199603
FTSTY-03	LANDFILL 3 (CLOSED) AND POND	No further investigation or RA was recommended for both the landfill and pond.	199212
FTSTY-04	FIRE TRAINING AREA	The DD, recommending NFA, was completed in March 2003. Received VDEQ concurrence letter dated Aug 04	200209
FTSTY-05	JP-4 FUEL TANK FARM	The final report was sent to VDEQ. NFA is programmed for the site. Determined not to be ER,A eligible. Received case closure letter under the UST program dated Apr 97	199201
FTSTY-07	AUTO CRAFT SHOP	The DD, recommending NFA, is currently in the review process. Received VDEQ concurrence letter dated Aug 04	200209
FTSTY-12	LACV 30 WETLANDS AREA	Based on the finding from the PA/SI, there are no future IRP activities planned.	199207
FTSTY-13	ATLANTIC STREET GAS STATION (4 USTS)	The tank was removed in December 1993 and the site was closed according to Virginia UST Regulations. NFA is planned for this site under the IRP program.	199312
FTSTY-14	BLOCK 600 USTS (39 USTS)	A project to remove the USTs and any contaminated soil was completed in December 1993. NFA is planned for the site.	199312
FTSTY-15	80TH DIV RESERVE SITE	During the June 2000 IAP meeting, it was determined the site was not ER,A eligible. Site is being addressed under the CC program.	199510

Initiation of IRP: 1977

Past Phase Completion Milestones

1987

- PA/SI - FTSTY-03 - Oct 87

1991

- PA/SI - FTSTY-14 - Mar 91
- PA/SI - FTSTY-13 - Sep 91

1992

- PA/SI - FTSTY-01, 02 (Phase I), 05, NIKE sites - Jan 92
- PA/SI - FTSTY-04, 06, 07 - Jan 92
- RD - FTSTY-14 - Jun 92
- RD - FTSTY-13 - Jun 92
- PA/SI - FTSTY-12 - Jul 92
- RI/FS - FTSTY-03 - Dec 92

1993

- RA - FTSTY-14 - Dec 93
- RA - FTSTY-13 - Dec 93

1994

- PA/SI - FTSTY-15 - May 94
- REM - FTSTY-04, 06 - Aug 94

1995

- REM - FTSTY-15 - Oct 95

1996

- PA/SI (Phase II) - FTSTY-02 - Mar 96

2002

- RI/FS - FTSTY-04, 07 - Sep 02

2003

- RI/FS - FTSTY-06 - Sep 03

2004

- LTM - FTSTY-02 - Sep 04

2005

- RD - FTSTY-06 - Dec 05

Projected ROD/DD Approval Dates: 2006

Projected Construction Completion Date of IRP: 2007

Schedule for Next Five Year Review: 2011

Estimated Completion Date of IRP (including LTM phase): 2015

FORT STORY IRP SCHEDULE

(Based on current funding constraints)

AEDB-R#	PHASE	FY07	FY08	FY09	FY10	FY11	FY12	FY13	FY14	FY15+
FTSTY-06	RA(O)									
	LTM									201510

Prior Years Funds

Total Funding up to FY04: \$5,765K

Year	Site Information	Expenditures	FY Total
FY05	\$0	\$0

Total Prior Year Funds: \$5,765K

Current Year Requirements

Year	Site Information	Requirements	FY Total
FY06	FTSTY-06 – RA(C)	\$305K	
	FTSTY-06 – RA(O)	\$93K	\$398K

Total Requirements FY06: \$398K

Total Future Requirements: \$438K

Total IR Program Cost (from inception to completion of the IRP): \$6,601K

FORT STORY

Military Munitions Response Program

Total AEDB-R MMRP Sites / AEDB-R Sites with RC: 1/0

AEDB-R Site Types

1 Small Arms Range

Most Widespread Contaminants of Concern: Metals

Media of Concern: Soil

Completed REM/IRA/RA: None

Total MMRP Funding

Prior Years (up to FY05):\$ 25,000

Current Year (FY06):.....\$ 0

Future Requirements (FY07+): ...\$780,000

Total:\$805,000

Duration of MMRP

Year of MMRP Inception: 2001

Year of MMRP RC: 2017

Year of MMRP Completion Including LTM: 2017

MMRP Contamination Assessment

MMRP Contamination Assessment Overview

The Department of Defense (DoD) has established the MMRP under Defense Environmental Restoration Program (DERP) to address DoD sites with munitions and explosives of concern (MEC) including unexploded ordnance (UXO), discarded military munitions (DMM), and munitions constituents (MC).

The United States (US) Army's (Army) inventory of Closed, Transferring, and Transferred (CTT) Military ranges and sites, has identified sites eligible for action under MMRP.

The MMRP eligible sites include other than operational ranges where UXO, DMM and MC is known or suspected and the release occurred prior to September 30, 2002. Properties classified as operational ranges are not eligible and, therefore, are excluded from the MMRP program.

The MMRP began in the 1990s as a result of key drivers such as processes outlined in the National Contingency Plan (40 CFR 300) as authorized by the Comprehensive Environmental Response, Liability Act of 1980, 42 US Code (U.S.C.) 9605, as amended by the Superfund Amendments and Reauthorization Act of 1986, Pub. L. 99-499, (hereinafter CERCLA).

The process began with three phases of range inventories. Phase 1 consisted of installations completing an initial data call. USAEC managed the implementation Phases 2 and 3 of the MMRP inventory.

The Phase 2 inventory dealt with active and inactive range considerations. The Phase 3 Army Range Inventory was completed at Fort Story in May 2003. The inventory identified one site as eligible for the MMRP. The Phase 3 inventory serves as the PA under CERCLA. A SI is scheduled to begin in October 2006.

MMRP Cleanup Exit Strategy

The installation plans to complete the SI in 2008 and execute follow-on phases/actions as required in the site cleanup strategy.

MMRP Previous Studies

Previous Studies

2002

- Final CTT Range/Site Inventory Report, Fort Story, Virginia, Malcolm Pirnie, Aug-02

FORT STORY

Military Munitions Response Program Site Description

STORY-001-R-01

Small Arms Range

SITE DESCRIPTION

The Small Arms Range was established during the early 1940s for rifle and pistol training. The range covered approximately five acres. However, only 3 acres are included in the CTT inventory because the remainder is classified as operational range. The Small Arms Range is located roughly 800 feet northeast of the installation's east entrance. The range had sixteen firing points that fired northeast toward the water.

CLEANUP STRATEGY

Army and DoD experience indicates that contamination on small arms ranges is primarily lead in soils and that remediation of these sites would primarily consist of excavation, off-site transportation, stabilization, and disposal. No MEC components would be expected at small arms ranges; therefore, they are not included in the estimate. Although the types of small arms ranges and patterns of contamination can vary, assumptions for this cost-to-complete estimate were based on the characteristics of a typical pistol and/or rifle MMRP range.

STATUS

REGULATORY DRIVER: CERCLA

RAC SCORE: 5 - Negligible Risk

CONTAMINANTS OF CONCERN:
Metals (Lead)

MEDIA OF CONCERN: Soil

Phases	Start	End
PA.....	200111	200305
SI	200610	200803
RI/FS	201410	201509
RD	201510	201609
RA(C).....	201610	201709

RC DATE: 201709

Initiation of MMRP: 2001

Past Phase Completion Milestones

2003

- PA completion STORY-001-R-01

Projected ROD/DD Approval Dates: TBD

Projected Construction Completion: 2017

Schedule for Five Year Reviews: TBD

Estimated Completion Date of MMRP including LTM: 2017

FORT STORY MMRP SCHEDULE

(Based on current funding constraints)

AEDB-R#	PHASE	FY07	FY08	FY09	FY10	FY11	FY12	FY13	FY14	FY15+
STORY-001-R-01	SI									
	RI/FS									201509
	RD									201609
	RA(C)									201709

Prior Years Funds

Total Funding up to FY04: \$25,000

Year	Site Information	Expenditures	FY Total
FY05	\$0	\$0

Total Prior Year Funds: \$25,000

Current Year Requirements

Year	Site Information	Requirements	FY Total
FY06	\$0	\$0

Total Requirements FY06: \$0

Total Future Requirements: \$780,000

Total MMR Program Cost (from inception to completion of the IRP): \$805,000

Fort Story is not on the NPL. All restoration activities are coordinated with VDEQ. They review scope of services before contracts are awarded for investigations. This ensures all aspects including sampling analysis are covered. This coordination reduces the likelihood of additional sampling or change orders after a contract has been awarded.

The surrounding community of Virginia Beach or the VDEQ has not expressed interest in establishing a TRC or RAB. There have been no efforts by Fort Story in soliciting interest because of the very limited restoration activities at the post.

Efforts Taken to Determine Interest

None. The regulating and surrounding communities have not expressed interest due to the very limited activities at Fort Story.

Results

No interest in a TRC or RAB.

Conclusions

Based on the following there is no need to form a TRC or RAB:

- Fort Story is not on the NPL.
- The regulating community is involved in the review of all restoration documents and activities.
- There is no significant contaminated media or human and ecological risks associated with the sites.
- There are very limited restoration activities at the post.

Follow-up Procedures

Fort Story will monitor regulator and community involvement in environmental issues on the post.

Interest in the TAPP Program

There is no interest in the TAPP Program.